PMC100

Service
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Service Manual

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Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçic

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

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1

SPECIFICATIONS

Synthesizer:

Synthesizer chip	: 6 melody and 5 rhythm tracks
Microprocessor/controller	: type 6803
ROM	: 32 Kbytes
RAM	: 8 Kbytes
Upper frequency	: 16KHz +/–3dB
S/N ratio	: 50dB

Tape section:

PLAY : bandwidth 60Hz–10KHz +/–3dB
distortion 2%
S/N ratio 50dB

RECORD : bandwidth 60Hz–8KHz +3dB –8dB
distortion 5%
S/N ratio –39dB

Connections:

3.5mm mini–jack stereo output socket,
100mW RMS into 32Ω;
3.5mm mini–jack stereo microphone socket,
sensitivity 60dB, impedance 600Ω,
bandwidth 20Hz–10KHz;
9V DC input for centre negative plug.

Rated Voltage:

9V DC nominal, 6 * 1.5V R6 batteries (penlight);
AC Adaptor ACC01/02/03 9V 500mA regulated
– nominal continuous rating.

Power Consumption:

Synthesizer:	2.25W
Tape section:	0.63W
Peak load:	7.20W

Battery life (with LR6, size AA):

Synthesizer:	4.5 hours
Tape record:	18.0 hours
Tape play:	25.0 hours

Dimensions (W/D/H):

220mm x 190mm x 40mm

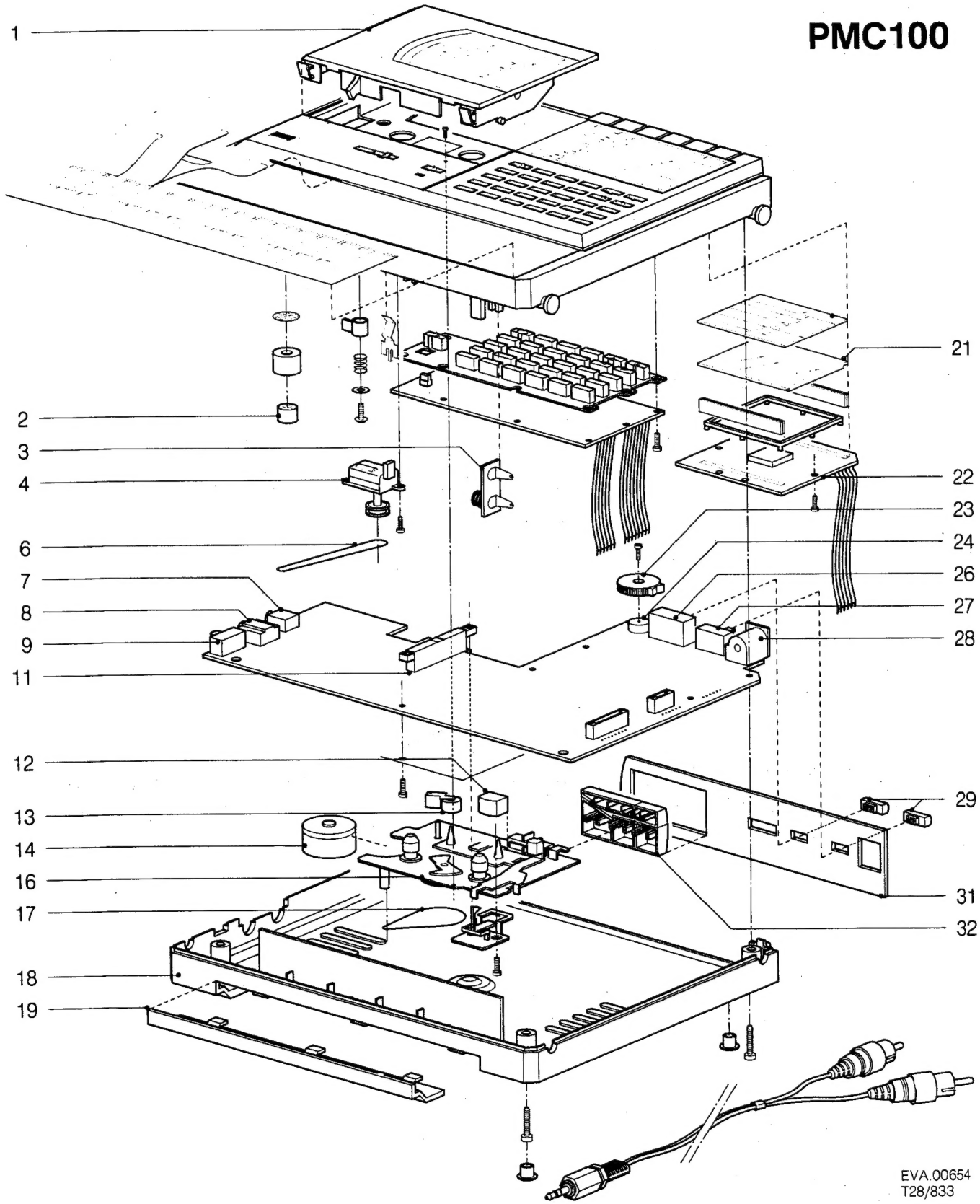
Weight:

715g excluding batteries

PARTS LIST EXPLODED VIEW

1	4822 443 62633	Cassette door
2	4822 242 30166	Microphone
3	4822 290 30298	Battery contact
4	4822 349 50328	Tape counter
6	4822 358 30887	Counter drive belt
7	4822 267 30997	Headphones socket
8	4822 267 30998	Microphone socket
9	4822 277 21272	Microphone on/off switch
11	4822 277 30896	Record/Playback switch
12	4822 249 10375	Record/Playback head
13	4822 528 70553	Pinch roller with holder
14	4822 361 21175	Motor
16	4822 691 20488	Cassette mechanism
17	4822 358 30888	Cassette drive belt
18	4822 443 51145	Bottom housing
19	4822 443 62632	Battery door
21	4822 130 90608	LCD display
22	4822 218 30456	LCD driver panel
23	4822 413 41482	Volume knob
24	4822 101 20995	Volume potentiometer
26	4822 277 21271	Audio/Data switch
27	4822 277 21269	On/Off switch
28	4822 267 30996	Power supply socket
29	4822 410 26812	Actuator for pos. 26 and 27
31	4822 454 20886	Ornamental plate
32	4822 410 26813	Cassette keys

PMC100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T28/833

PMC100 SELFTEST PROCEDURE

The PMC100 has a built in selftest program, to check memory, keyboard, switches, display, synthesizer and cassette recorder.

The test procedure is started by keeping both the bottom left and bottom right keys on the control keypad pressed (pos. 45 in Fig 1: NOTE/REST VALUE KEYS) and then switching on the synthesizer (pos. 8 in Fig 1: SYNTH ON/OFF).

Any running test is stopped when the START/STOP key (pos. 20 in Fig 1) is pressed, and the next test is started immediately.

The test procedure consists of the following steps:

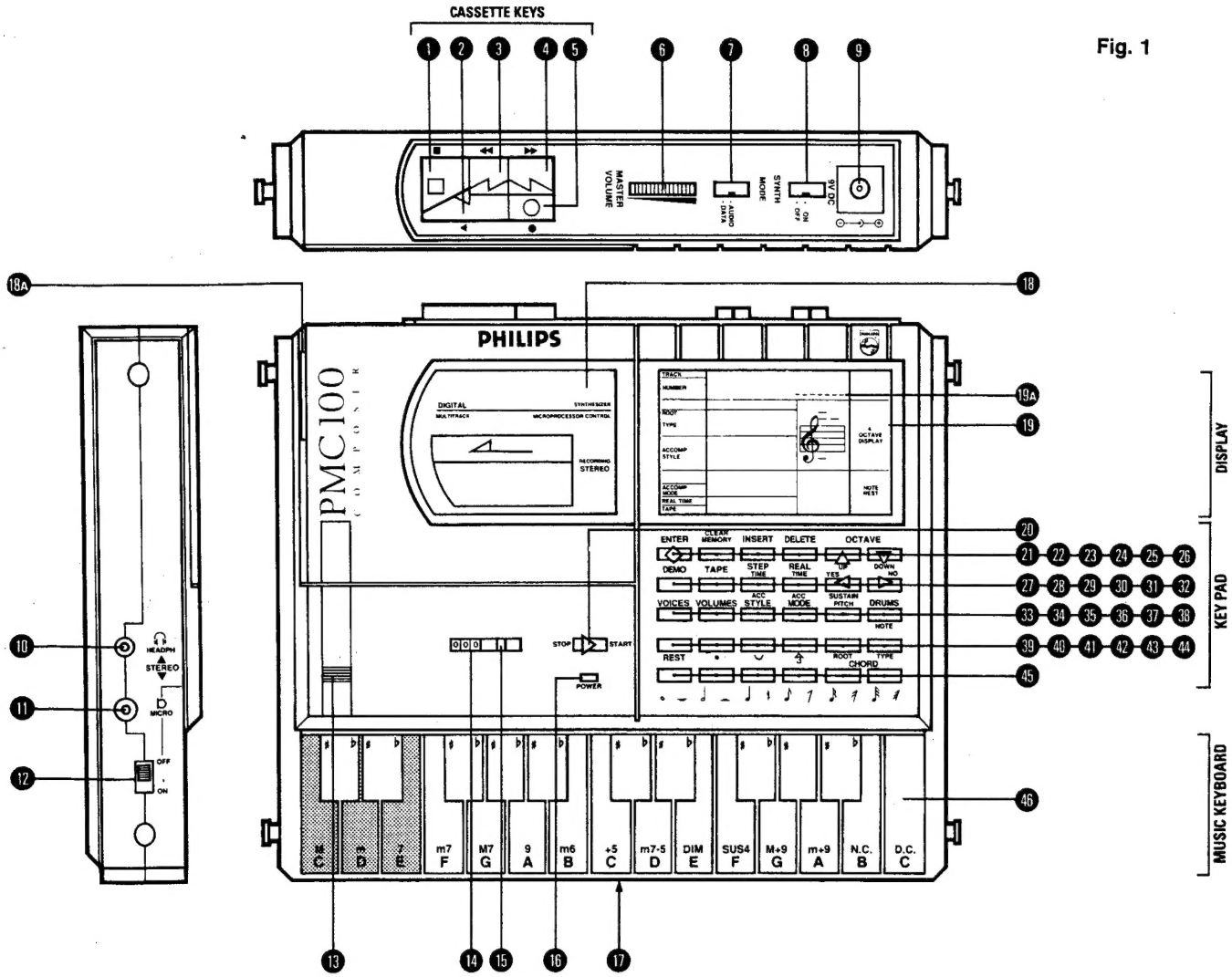
RAM test:

1. First, a RAM test is performed. This takes about 1s. If the RAM test is unsuccessful, the message "Err" is displayed in the numeric segment area (pos. 19A in Fig 1).

LCD test:

2. If the RAM test is successful, all the LCD segments are switched on, see Fig 2. Then any key should be pressed.

Fig. 1



- 1 STOP
- 2 PLAY
- 3 FAST FORWARD
- 4 REWIND
- 5 RECORD

CASSETTE KEYS

- 6 MASTER VOLUME CONTROL
- 7 AUDIO/DATA SWITCH
- 8 SYNTH ON/OFF SWITCH
- 9 DC SOCKET

- 10 STEREO OUTPUT SOCKET
- 11 STEREO MICROPHONE SOCKET
- 12 MICROPHONE ON/OFF SWITCH

- 13 MICROPHONE
- 14 TAPE COUNTER
- 15 COUNTER RESET BUTTON
- 16 POWER / POWER LOW INDICATOR
- 17 BATTERY COMPARTMENT

- 18 CASSETTE DOOR
- 18A CASSETTE DOOR SIDE LIP
- 19 LCD DISPLAY
- 19A DIGITAL DISPLAY SECTION

- 20 STOP/START KEY

- 21 ENTER
- 22 CLEAR MEMORY
- 23 INSERT
- 24 DELETE

COMMAND KEYS

- 25 UP SCROLLING / OCTAVE SHIFT UP
- 26 DOWN SCROLLING / OCTAVE SHIFT DOWN
- 31 LEFT SCROLLING / YES (CONFIRM)
- 32 RIGHT SCROLLING / NO (CONFIRM)

CONTROL KEYS

- 27 DEMO
- 28 TAPE
- 29 STEPTIME
- 30 REALTIME

MODE KEYS

- 33 VOICES
- 34 VOLUMES
- 35 ACCOMPANIMENT STYLE
- 36 ACCOMPANIMENT MODE
- 37 SUSTAIN/PITCH
- 38 DRUMS

PERFORMANCE KEYS

- 39 NOTE
- 43 ROOT
- 44 TYPE

CHORD KEYS

- 39 REST SELECT
- 40 DOT
- 41 TIE
- 42 TRIPLET
- 45 NOTE/REST VALUE

NOTE/REST KEYS

- 46 MUSIC KEYBOARD

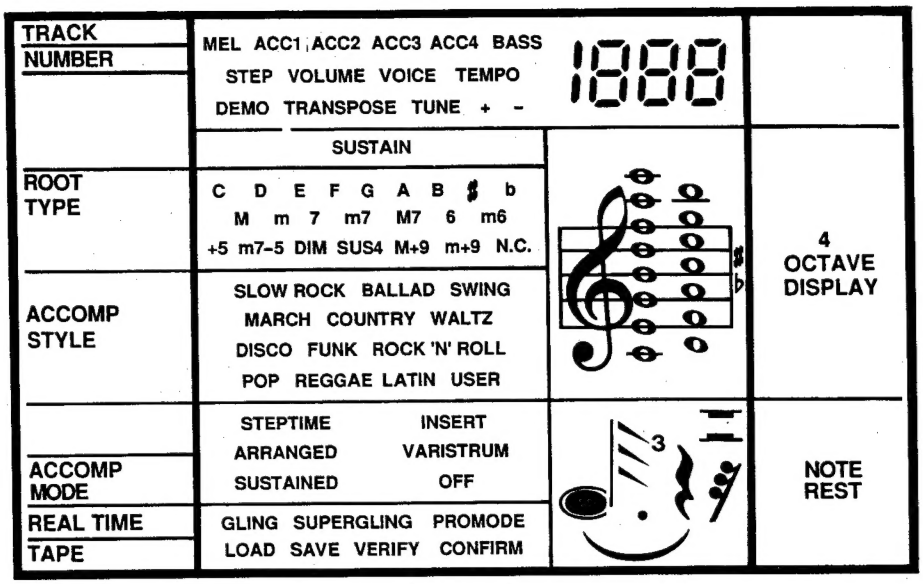


Fig. 2

3. All the LCD segments start blinking. Any key should be pressed.

4. All the LCD segments stop blinking, but remain on. Any key should be pressed.

5. All the LCD segments are switched off, and then each segment is sequentially switched on and off, one at a time. The time for this test is approx. 41s. If the START/STOP key (pos. 20 Fig 1) is pressed this test sequence is stopped.

Keyboard test:

6. The number "56" is displayed on the LCD (pos 19A in Fig 1). This indicates the number of keys that remain to be pressed to complete the keyboard test. Each time a key is pressed, the number is decremented by 1. The keys do not have to be pressed in a specific order. The only rule is that the START/STOP key is pressed **last**. Pressing the START/STOP key at any time during the keyboard test terminates the keyboard test, and continues with the sound test.

Sound test:

7. When all the keys have been pressed or START/STOP has been used to terminate the keyboard test, the sound test is performed. All five drum sounds are played in order (Bass Drum, Snare Drum, Tom Drum, Ride Cymbal, Closed Hi–hat). The drums continue to play in this order until any key is pressed.

8. A 1KHz sinewave is played. The amplitude is about $2V_{pp}$ at the headphones output (ref. left channel; the right channel has lower volume for synthesizer voices, but higher volume for drums). This signal is also used as reference signal for the measuring of oscillograms. Any key should be pressed.

9. Six tones of ascending frequency are played. Each tone uses a different sound channel on the music IC. Only one tone is played at one time. If six tones do not sound, the sound chip (IC7 = YM1823B) is defective. Any key should be pressed.

Cassette recorder test:

10. A tape out signal is generated. This is a 2KHz square wave. The AUDIO/DATA switch (pos. 7 in Fig 1) must be in the DATA position. The signal is not sent to the headphones output. Any key should be pressed.

11. The normal PMC100 software is executed allowing the digital (DATA) tape functions to be tested. The bypacked data cassette (or any other cassette containing digital data for the PMC100) should be inserted and rewound. The AUDIO/DATA switch should be in the DATA position.
    - Press the "TAPE" key (pos. 28). The "LOAD" segment starts blinking, and the "SAVE" and "VERIFY" segments are switched on.
    - Press the "ENTER" key (pos. 21). The "LOAD" segment stops blinking, but remains on, and the "SAVE" and "VERIFY" segments are switched off. The "CONFIRM" segment starts blinking.
    - Press the "YES/CURSOR LEFT" key (pos. 31).
    - Press the "PLAY" key (pos. 2) on the cassette unit.

    After a few seconds, a number is displayed on the LCD. The first one or two digit positions are blinking. The last two digits (the number of data blocks on tape) count down to 0.
    If the message "Err" is displayed on the LCD, the load was not successful.

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PMC100 CASSETTE ADJUSTMENTS

Adjustment	Cassette	Recorder position	Measure on	Read on	Adjust with	Adjust to
Tape speed	3150 Hz of SBC420**	PLAY	Headph. output socket	Wow and flutter meter	VR1 on main panel	*
Azimuth R/PB head	8 KHz of SBC420**	PLAY	Headph. output socket	mV-meter	R. screw P/PB head eras. side***	Maximum output
Bias frequency	-	RECORD	R/PB head	osc.-scope	L4	85 KHz +/-5%
Bias amplitude	-	RECORD	C53/C54	osc.-scope	L4	$68V_{pp}$

* The maximum permissible speed deviation is 2%. Moreover the wow and flutter can be read, this value should not exceed 0.3%.

** SBC420: 4822 397 30071

*** Azimuth to be adjusted with cassette door removed. Open door, press left and right sides to unlock and pull out door, see Fig 3.

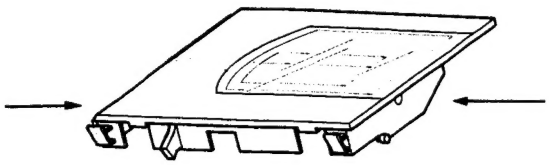


Fig. 3

DIGITAL CIRCUIT

MEMBRANE KEYBOARD 25 WAY

DATA KEYBOARD 31 SWITCHES

IC6 PC74HC244 DRIVER

IC9 PC74HCT373 LATCH

IC10 74HCT138 DECODER

IC4 6264 SRAM

IC5 MSM27256ZB ROM

IC8 S6803P

IC1 µPD7225 LCD P2573

IC7 MS1823 SOUND SYNTH

DATABUS CONTROLLER

REGISTER

TIMING CONTROLLER

INSTUMENTAL ROM

ENVELOPE GENERATOR

VIBRATOR AMPLIFIER MODULATOR

PHASE GENERATOR

OPERATOR

DATA CONVERTER

IC13 AN6651

IC2-3C LM324

IC11-6A IC11-6B IC11-6C IC11-6D IC11-6E IC11-6F HEF4069UB

IC12-4A IC12-4B IC12-4C IC12-4D PC74HC00

IC14 78M05

IC15 78M05

ADDRESS

DATA

MOTOR SWITCH

TO CASSETTE CIRCUIT

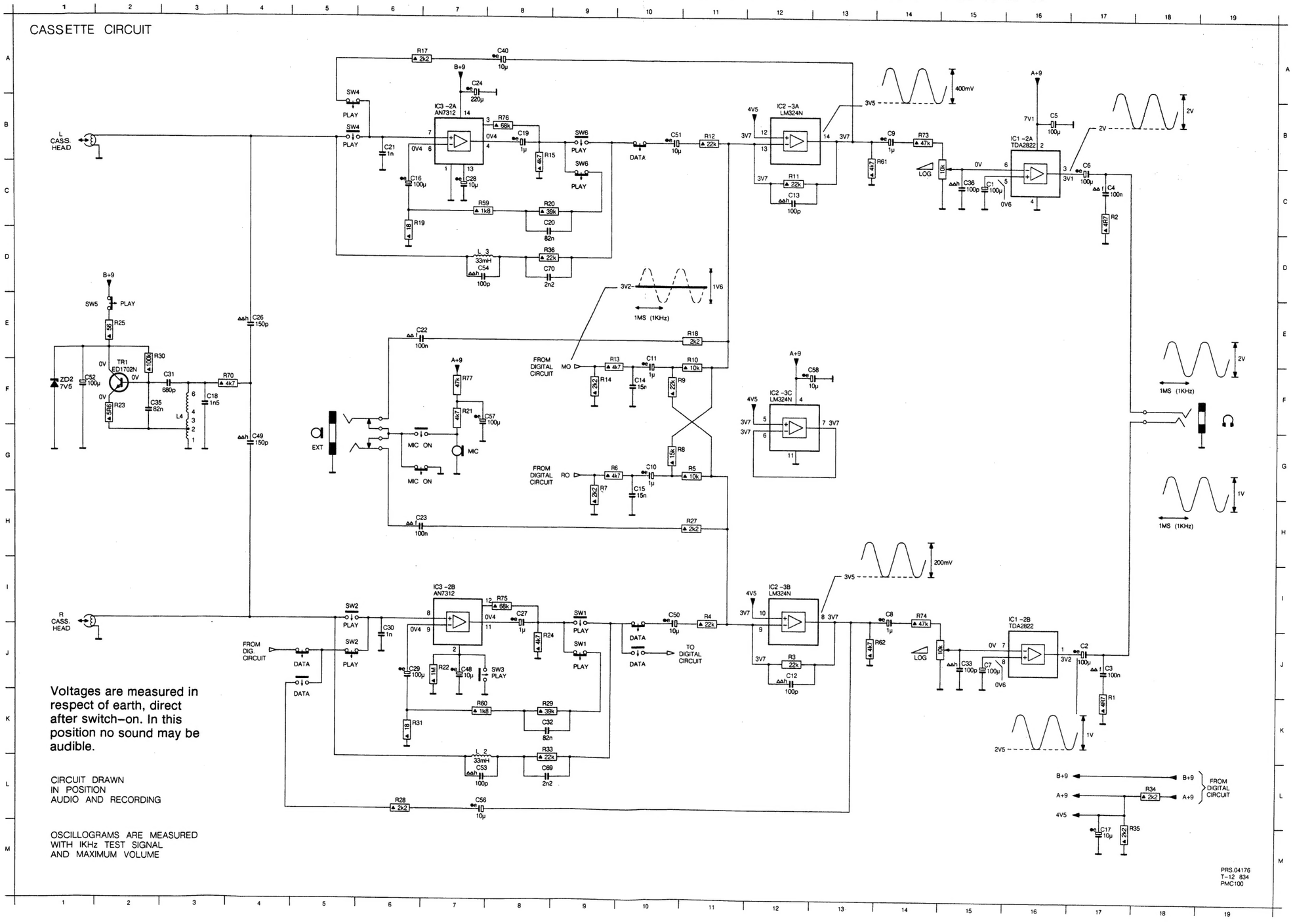
FROM DIGITAL CIRCUIT

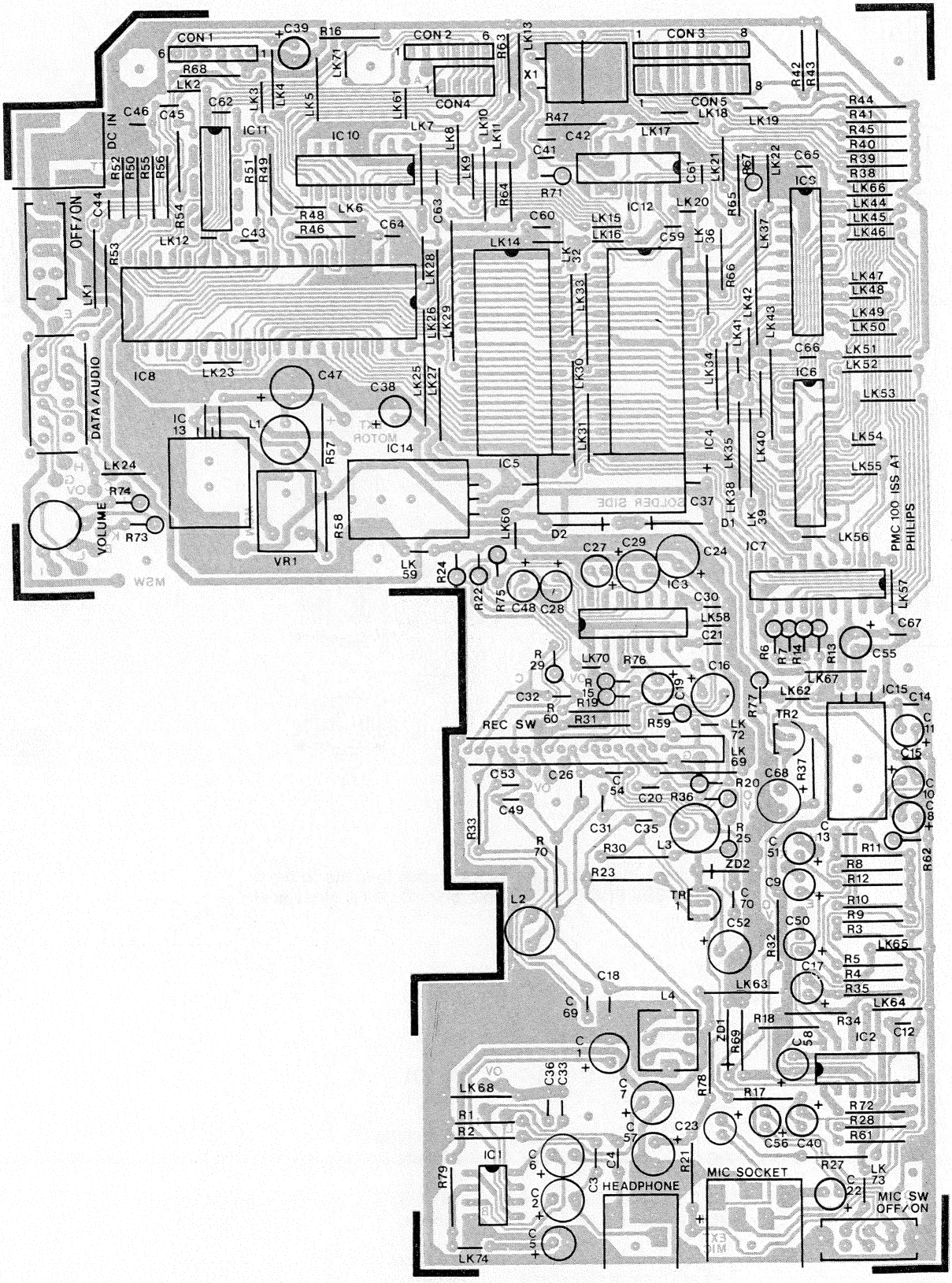
Voltages are measured in respect of earth, direct after switch-on. In this position no sound may be audible.

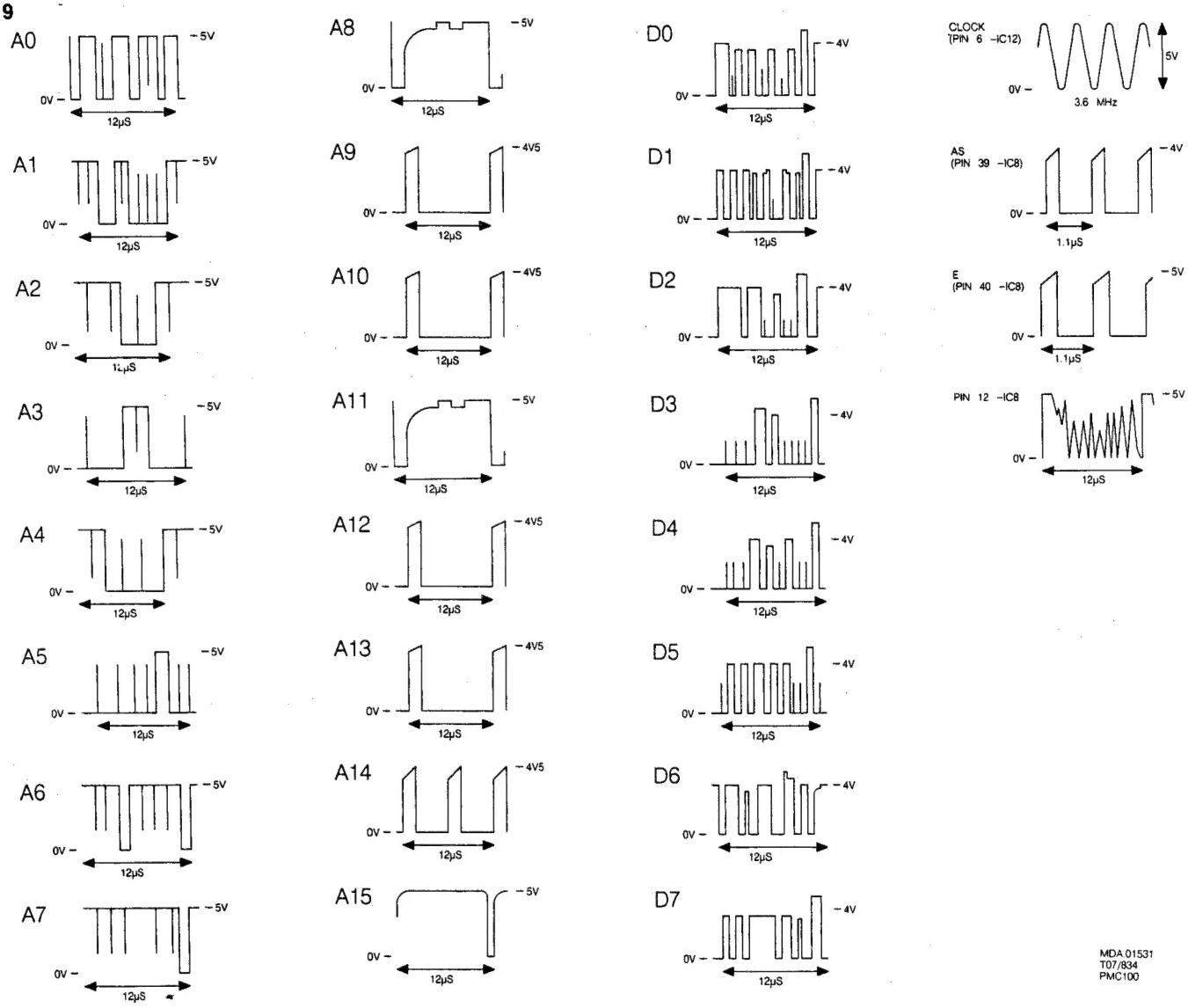
PRS.04179
T-04 833
PMC100

C1	I 3
C37	M19
C38	M18
C39	N 9
C41	O 8
C42	O 7
C43	M 5
C44	N 4
C45	L 5
C46	M 4
C47	L18
C55	K14
C59	A16
C60	A19
C61	A15
C62	K 7
C64	E 8
C65	A12
C66	A 9
C67	K14
C68	O19
D1	N19
D2	J18
IC1	J 3
IC12	A18
IC12	B14
IC13	L19
IC14	M19
IC15	K14
IC2	G 6
IC6	A 8
IC7	K13
IC8	G 8
IC9	A11
L1	K18
C63	E12
R1	J 2
R16	J 6
R2	J 1
R26	N19
R3	K 1
R32	G 7
R37	G 7
R38	B 6
R39	B 6
R40	B 6
R41	B 6
R42	B 7
R43	B 7
R44	B 7
R45	B 7
R46	M 9
R47	O 7
R48	J 6
R49	E 9
R5	J 1
R50	N 6
R51	M 5
R52	N 5
R53	M 4
R54	M 5
R55	M 5
R56	L 4
R57	K20
R58	L20
R63	E11
R64	E11
R65	E11
R66	F11
R67	A14
R68	J 7
R71	O 8
R72	G 6
R9	G 6
TR2	N19
VR1	L19
X1	O 7
ZD1	G 7

C1 C15 C14 F10 C19 B 8 C23 H 6 C29 J 6 C33 J15 C48 J 7 C53 L 7 C6 B17 C9 B14 IC2 F12 L4 F 3 R13 E 9 R19 C 7 R23 F 2 R29 K 8 R35 L18 R59 C 7 R7 G 9 R78 F 7 SW1 I 9 SW4 B 5 TR1 F 2
C10 G10 C15 G10 C2 J17 C24 A 7 C3 J17 C35 F 2 C49 G 4 C54 D 7 C69 L 8 IC1 B16 IC3 B 7 R1 K17 R14 F 9 R2 C17 R24 J 9 R3 J12 R36 D 8 R6 G 9 R73 B14 R78 F 4 SW1 J 9 SW4 A 5 ZD2 F 1
C11 E10 C16 C 6 C20 C 8 C26 E 4 C30 J 6 C36 C15 C5 B16 C56 L 7 C7 J15 IC1 B16 IC3 I 7 R10 E11 R15 B 9 R20 C 8 R25 E 2 R31 K 7 R38 E 3 R60 K 7 R74 I14 R79 A16 SW2 I 5 SW5 E 1
C12 J12 C17 M17 C21 B 6 C27 I 8 C31 K 8 C40 A 8 C51 B10 C58 F13 C8 I14 IC2 I12 L 2 L 3 K 7 D 7 R11 C12 B11 R17 R21 A 6 R4 E11 R22 J 7 R28 L 6 R5 G11 R62 J14 R76 B 8 R9 F11 SW3 J 8 SW6 C 9
C13 C12 C18 F 3 C22 E 6 C28 C 7 C32 K 8 C40 A 8 C51 B10 C58 F13 C8 I14 IC2 I12 L 3 D 7 R12 R18 H11 R33 K 8 R4 I11 R61 B14 R75 I 8 R8 G11 SW2 J 5 SW6 B 9




CON 1
CON 2
CON 3
CON4
CON5
DC IN
OFF/ON
DATA/AUDIO
VOLUME
REC SW
VR1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC10
IC11
IC12
IC13
IC14
IC15
X1
TR1
TR2
L1
L2
L3
L4
D1
D2
ZD1
ZD2
HEADPHONE
MIC SOCKET
MIC SW OFF/ON
PMC 100 ISS A1
PHILIPS



For measuring oscillograms, reference is made to the SELFTEST PROCEDURE text, point 8 (1KHz sinewave).

ELECTRICAL PARTS LIST

D 1	4822 130 80847	1N4001
D 2	4822 130 80847	1N4001
IC 1	5322 209 83002	TDA2822M
IC 2	4822 209 80587	LM324N
IC 3	4822 209 70997	AN7312
IC 7	4822 209 73759	MS1823
IC13	4822 209 73723	AN6651
TR 1	4822 130 41729	ED1702N
TR 2	5322 130 40418	2N3704
ZD 1	4822 130 81107	ZENER DIODE 7V5